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RESEARCH ARTICLE

Impact of the Exchange Rate on Inflation in Afghanistan (2015-2023)

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ABSTRACT

This study evaluates the effect of exchange rate volatility on inflation in Afghanistan. The Afghan economy is highly import-dependent and faces significant external economic pressures. Using nine years of quarterly time series data and applying the Autoregressive Distributed Lag (ARDL) model, the research examines both short-term and long-term dynamics of the relationship, with a special emphasis on the moderating role of money supply. The results indicate that variation in exchange rate significantly affects inflation in the short term, with both current and lagged effects, underlining the vulnerability of domestic prices to external shocks. On the other hand, the study found no evidence of a long-run relationship between exchange rates, inflation, and money supply. Moreover, contrary to theoretical expectations, changes in money supply did not reveal a statistically significant effect on inflation during the period. These findings underscore the critical contribution of exchange rate stability in controlling inflation and focus on the need for targeted monetary and structural policies to weaken inflationary pressures. Policymakers should strengthen exchange rate management, reduce reliance on imports, and improve institutional capacity to achieve sustainable economic stability.

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Keywords

ARDL, Da Afghanistan Bank, Exchange Rate, Inflation Rate, Money Supply.

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Introduction

Inflation is the general increase in the price of goods and services (Mankiw 2021). It is considered one of the biggest macroeconomic challenges for developing countries, especially countries like Afghanistan. It not only affects purchasing power but also creates uncertainty in economic planning and investment. Exchange Rate is the price of one currency in terms of another, determining the value at which one currency can be exchanged for another in the foreign exchange market (Krugman & Obstfeld, 2021). Inflation is linked with exchange rate volatility in such a way that fluctuations in the exchange rate affect the prices of exported and imported goods, the cost of external debt, and the overall trade balance. On the other hand, theoretically the money supply effects the inflation rate, in this research the money supply is represented by Broad Money Supply (M2) which includes cash, checking deposits (M1), and near-money assets such as savings deposits, time deposits, and retail money market funds, which are highly liquid but not directly used for transactions (Mishkin, 2019).

Afghanistan is a country that depends on imports to meet its domestic necessities, over the past two decades, Afghanistan's import levels have differed. In 2005, imports were about $1.97 billion, increasing to a high level of $8.93 billion in 2012. By 2023, imports reached $8.58 billion. On average, from 2003 to 2023, the annually imports of Afghanistan were approximately $5.63 billion (Trading Economics, 2024). High level of import is particularly vulnerable to exchange rate instability. If the value of the Afghani Loses value compared to foreign currencies, the prices of imported goods rise and inflationary pressures

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increase. On the other hand, exchange rate stability plays a vital role in stabilizing inflation and promoting economic growth. Understanding the relationship between the exchange rates and inflation will help fiscal and monetary policymakers to formulate policies that will stabilize the exchange rate, which in turn will pave the way for price stability and economic growth.

This paper tries to examine the impact of exchange rate fluctuations on inflation in Afghanistan based on quarterly data over the past nine years.

a. Research Problem

Despite the Afghani's appreciation and stabilization over the past three years under the rule of the Islamic Emirate of Afghanistan, inflationary pressures persist for households and businesses. Theoretically, exchange rate stability should help control inflation, yet Afghanistan continues to face rising prices. This contradiction suggests that either the exchange rate's stability has not effectively mitigated inflation, or other economic factors—such as international sanctions, reduced foreign aid, and import dependency—are driving inflationary pressures. Moreover, while past research highlights the link between exchange rate fluctuations and inflation, limited studies have examined whether exchange rate stability in Afghanistan has contributed to inflation control. This study aims to bridge this gap by distinguishing the impact of exchange rate stability from other macroeconomic factors, providing policymakers with clearer insights for inflation management and economic stability.

The main objective of the study is to find a solution to this research problem by determining the impact of exchange rate fluctuations on inflation in Afghanistan over the past nine years.

b. Research Objective

1. To evaluate the relationship among the exchange rate fluctuations and inflation in Afghanistan.
2. To identify the degree which the exchange rate volatility affects inflation trends.
3. To assess whether the money supply moderates the link between exchange rate and inflation.

c. Research Questions

1. How does the exchange rate affect inflation in Afghanistan?
2. Do exchange rate changes have a significant lagged impact on inflation?
3. Does money supply contribute to inflation alongside exchange rate changes?

d. Hypotheses

H1: There is a significant relationship between exchange rate fluctuations and inflation in Afghanistan.

H2: Exchange rate volatility significantly influences inflation trends in Afghanistan.

H3: The money supply significantly moderates the relationship between exchange rate fluctuations and inflation in Afghanistan.

Literature Review & Theoretical Background

Theoretically, there are many factors, including money supply, exchange rate, demand-pull factors, cost-push factors, wage-price spiral, expectation of future inflation, supply chain disruption, taxation policies, supply and demand for labor, and global commodity prices, which influence inflation. According to the quantity theory of Money (QTM), an excessive expansion of the money supply may result in inflation if the output growth remains constant. Empirical studies have shown that in emerging economies, rapid monetary expansion is often correlated with inflationary pressure (Friedman, 1963). In the case of the exchange rate, depreciation of the national currency leads to higher import prices, which can lead to cost-push inflation. Likewise, the exchange rate fluctuation influences inflation expectations and pass-through effects. (Ghosh, 2009). Moreover, demand-pull factors (increase in disposable income and government spending) and cost-push factors (the rising price of raw materials, wages, and energy) influence the level of inflation (Mankiw, 2021).

Considering the theoretical short discussion above, we have gone through recent studies to find out the impact of the exchange rate and other macroeconomic variables on the inflation rate in different contexts.

Research Studies employing dynamic programming methods creation of the most effective monetary policy in a basic, calibrated model of an open economy and evaluates the effect of the liquidity trap generated by the zero bound on nominal interest rates. It shows that the optimal policy when close to price stability is asymmetric. As inflation decreases, Policy becomes expansionary more quickly and aggressively than would be optimal in the absence of the zero bound. This introduces a Positive skew in the average inflation rate. It also discusses implementation and interpretation difficulties of policy execution at the zero bound in relation to the current scenario in Japan (Wieland, 2000).

Shahmordi (2010) assessed the impact of monetary policies on Iran's economy using a stochastic dynamic New Keynesian model. The findings indicated that, without model rigidity, a money growth shock had no

significant effect on real economic variables such as non-oil production, consumption, and private investment, affecting only inflation. However, when nominal rigidities were introduced into the model, the effects of monetary shocks on the volatility of real economic variables became quite pronounced.

A study on the effects of monetary policy on output and inflation in Afghanistan is done, using the dynamic stochastic general equilibrium approach. The results show the impulse response functions of production are negative to the external aid shock, financial shock, exchange rate shock, technology shock, and external shock. On the other hand, the impulse response function of production is positive to the monetary shock and cost shock. An impulse response function of inflation is positive for all shocks except for technology shock (Abbasinejad et.al, 2017).

Abbasinejad et al. (2017) conducted a study on the effects of monetary policy on output and inflation in Afghanistan using a dynamic stochastic general equilibrium approach. The findings indicate that the impulse response functions of production are negative for external aid shock, financial shock, exchange rate shock, technology shock, and external shock. Conversely, the impulse response function of production shows a positive response to monetary shock and cost shock. Meanwhile, the impulse response function of inflation is positive for all shocks, except for the technology shock.

A study examined the effects of Da Afghanistan Bank's monetary policy on inflation and exchange rates. The findings indicate that the bank has effectively achieved both monetary and price stability. Specifically, the results suggest that a one percent increase in the currency auction leads to a 0.034 percent rise in inflation. Similarly, a one percent increase in the auction results in a 0.002 percent appreciation of the Afghanis (Stanikzai et al., 2023).

To answer the question "Monetary policy of Afghanistan; is it efficient" a study is completed to evaluate the efficiency of the Monetary policy of Afghanistan by checking the monetary policy's two important tools capital notes and selling of foreign currencies, as well as the correlation of important macroeconomic indicators with Afghanis value. The correlation analysis of macroeconomic indicators with the exchange rate reveals that most indicators have a correlation with the exchange rate, as evidenced by an R^2 greater than 50 percent. However, only GDP growth shows a statistically significant p-value at the 0.05 level. Additionally, 40 percent of the changes in the exchange rate were attributed to Da Afghanistan Bank's foreign currency and capital notes sales. The coefficient for the effect of foreign currency sales on the exchange rate is negative, with a significant p-value, while the coefficient for capital notes is positive, which contradicts the theoretical expectations of such sales. Furthermore, changes in narrow money and broad money account for 47 percent of the variations in the CPI. Despite this, the impact is weak, requiring significant adjustments in the money supply to affect the CPI. In conclusion, while the central bank's monetary policy has a more substantial impact on the exchange rate, the government must also consider other factors that influence price stability (Azizi & Daqiq, 2019).

From the above theoretical and empirical review, we conclude that in various contexts the inflation rate is influenced by several macroeconomic factors along with the exchange rate. Nevertheless, specifically under the current circumstance of Afghanistan, there was no study found on the impact of the exchange rate on inflation. In this research, we explore the impact of exchange rate and other macroeconomic factors on the inflation rate in the current situation of Afghanistan.

Material and Methods

The study aims to investigate the effects of exchange rate on inflation using the last nine years (2015-2023) of quarterly time series data for inflation, exchange rate and money supply. The following methodology provides a clear roadmap to focus on the research objectives.

This study uses the quantitative analysis by launching econometrics models to measure the effects of exchange rate on inflation in the short and long run. In the model, the dependent variable is inflation (the percentage change in consumer price index) and the independent variables are exchange rate (AFG/USD) and money supply (broad money or M2). It is important to note that we have transformed the exchange rate and money supply values to the log form to normalize the data. The data related to the variables are taken form the quarterly report of the (DAB) Da Afghanistan Bank and (NSIA) National Statistics & Information Authority of Afghanistan. For estimating, the short-term and long-effects, we employed the Autoregressive Distributed Lag (ARDL) model, which is most recommended for the mixed order of integration. The ARDL model is as follow along with its specification.

$$Inf_t = \alpha + \sum_{i=1}^{p} \beta_i Inf_{t-i} + \sum_{j=0}^{q} \gamma_j logExR_{t-j} + \sum_{k=0}^{r} \delta_k logM2_{t-k} + \varepsilon_t$$

Where:

- Inf_t: inflation rate (percentage change) at time t.

- ExRt: Lagged values of exchange rate (percentage changes) at time t.
- M2t: Lagged values of money supply (percentage changes) at time t.
- α: Intercept term.
- βi,γj,δk: Coefficients of lagged variables.
- p,q,r: Optimal lags determined via criteria
- ɛt: Error term.
- p,q,r: Optimal lags for inflation, exchange rate, and money supply, determined using lag selection criteria.

Before, estimating the ARDL model, we conducted stationarity tests on the variables to specify their order of integration. The Augmented Dickey-Fuller (ADF) test (1979) was used to determine the stationarity of the variables at their levels and first differences. Stationarity is a critical requirement for time series analysis to confirm the soundness of econometric models. The test results are summed up in Table 1.

Table 1. The Augmented Dickey-Fuller (ADF) Stationarity Test

Variable	Stationary Test	At level *t-statistics*	At 1st difference *t-statistics*
Inf	ADF Test	-2.747***	-3.253***
ExR	ADF Test	-0.417	-4.138 ***
M2	ADF Test	0.532	-3.265 ***

Note: The t-statistics were compared against the critical values at 1% and 5%, significance levels to determine stationarity. ** denotes stationarity at the 5% level, while * shows stationarity at the 1% level.**

In light of the results, the inflation (inf) was stationary at level, but the remaining two variables Exchange Rate (ExR) and Money Supply (M2) were not stationary at their levels and transform into stationary after first differencing, indicating that one variable is integrated of order I(0) and other are integrated of order one I(1). This confirms the appropriateness of the ARDL modeling approach. As it can accommodate variables integrated at levels I(0) and I(1) but didn't higher-order.

For proper determination of the ARDL model, it is important to find the correct lag length for the variables included in the analysis. In the study, applied the Akaike Information Criterion (AIC) (1974) to choose the optimal lag length because it provides a good balance between model fit and complexity by penalizing excessive lag length inclusion.

The optimal lag length for the variables— inflation (inf), Exchange Rate (ExR) and Money Supply (M2) was specified based on the lowest value of the AIC from the selection process. The selection results indicated that a lag length of two for each of the variables provided the best model fit according to the AIC. As such, a lag length of two was chosen for the ARDL model to obtain short-run dynamics and long-run equilibrium relationships.

The optimal lag length selection was carried out using Stata's varsoc command, which computes various criteria for different lag lengths. The resulting optimal lags used in the ARDL estimation were 2 for inflation, 4 for the Exchange Rate, and 2 for Money Supply.

Finally, we estimated the ARDL to find the short-term and long-term effects. The mentioned analysis (regression analysis, stationary tests and some other complementary tests) have been done using the software STATA, which is most recommended for analyzing time series data.

Results, Interpretation & Discussion

The primary aim of this study is to evaluate the association between the exchange rate and inflation in Afghanistan, considering the potential moderating role of money supply (M2). An Autoregressive Distributed Lag (ARDL) model was used to assess both short-run and long run relationships using quarterly data from the last nine years. The optimal lag length of (2, 4, 2) was respectively determined for the variables (inflation, exchange rate and money supply) using the Akaike Information Criterion (AIC), and the bounds testing procedure by Pesaran, Shin, and Smith (2001) was conducted to evaluate co-integration between the variables.

a. Descriptive Statistics

Descriptive statistics present summary statistics for each variable (e.g., mean, standard deviation, min, max). This provides us context for the scale and variation in the data.

Table 2. Descriptive Statistics Table

Variable	Obs	Mean	Std. dev.	Min	Max
Inflation (Change in CPI)	36	3.578	5.215733	-8.95	16.23
Exchange Rate (Af/USD)	36	72.652	1.1453	57.54	95.49
Money Supply (in billions Af)	36	443.098	0.00112	363.078	549540.87

Table 2 summarizes the descriptive statistics for the variables used in the analysis

The Table 2 summarizes descriptive statistics for three variables: inflation, exchange rate, and money supply, based on 36 quarters time series data. According to the table, inflation is highly volatile compared to the exchange rate and money supply, as shown by its larger standard

deviation. On the other hand, exchange rate and money supply show much smaller variability, indicating stability in these variables over the observed period.

b. Stationarity Test and Lag Selection

Stationarity was assessed using the Augmented Dickey-Fuller (ADF) test and the findings are visible in methodology part in Table 1. The results indicated that inflation was stationary at level I(0), while the exchange rate and money supply were stationary at I(1). None of the variables were integrated at order two I(2), confirming the suitability of the ARDL approach. Likewise, the optimal lag structure for the ARDL model was specified using the Akaike Information Criterion (AIC), which indicated (2, 4, 2) as the optimal lag lengths for inflation, exchange rate, and money supply, respectively.

c. ARDL Bounds Test for Long-run Relationship

In case, the variables became stationary at different orders than for the existence of the long-term relationship the bound test is most recommended. The bounds test for long run relationship was conducted. The results of bounds test along with null hypothesis is displayed in the Table 3 below:

Table 3. ARDL Bounds Test (Pesaran, 2001)
F= 1.781
t= -1.931

Critical Values (0.05-0.01), F-statistic (Fisher, 1925)				
	[(I_0)] L_05	[(I_1)] L_05	[(I_0)] L_01	[(I_1)] L_01
k_2	3.79	4.85	5.15	6.36
Critical Values (0.05-0.01), t-statistic				
	[(I_0)] L_05	[(I_1)] L_05	[(I_0)] L_01	[(I_1)] L_01
k_2	-2.86	-3.53	-3.43	-4.10

- **Null Hypothesis (H_0):** No long-run relationship appears among the inflation, exchange rate and money supply.
- **Alternative Hypothesis (H_1):** A long-run relationship is observed among the inflation, exchange rate and money supply.

As the calculated F=1.781 is below the I(0) bound (3.79), so We are not able to reject the null hypothesis. This suggest that there is no evidence of a long-run relationship among inflation, exchange rate, and money supply in this model. At 5% significance the I(0) Bound and the I(1) Bound are respectively, (-2.86) and (-3.53). The calculated t is (−1.931), which is above the I(0) bound (-2.86). In this case, we fail to reject the null hypothesis. We conclude that both the F-statistic and t-statistic indicate that there is no significance long-run relationship among the variables in this ARDL model.

d. ARDL Model estimation

The ARDL model was estimated to study the relationship between inflation (dependent variable), exchange rate, and money supply (independent variables). As the bounds test indicated no long-run relationship, the focus is on analyzing the short-run dynamics of the model.

Table 4. ARDL Model results

ARDL (2,4,2) regression

Sample: 2015q1 thru 2023q4					Number of obs =	**36**
					F (10, 25) =	**26.31**
					Prob > F =	**0.0000**
					R-squared =	**0.9132**
					Adj R-squared =	**0.8785**
Log likelihood = -67776251					Root MSE =	**1.9080**
inf	Coefficient	Std. err.	t	p> |t|	**(95% conf. interval)**	
inf						
L1.	1.317506	.1331533	9.89	0.000	1.043271	**1.59174**
L2.	-.5841082	.2079248	-2.81	0.010	-1.012337	**-.1558791**
logexr						
--.	47.52952	18.25255	2.60	0.015	9.937688	**85.12135**
L1.	-62.18624	22.69145	-2.74	0.011	-108.9202	**-15.45232**
L2.	43.40111	21.50188	2.02	0.054	-.882839	**87.68505**
L3.	15.01001	22.18043	0.68	0.505	-30.67146	**60.69147**
L4.	-35.15187	22.21766	-1.58	0.126	-80.91	**10.60626**
logm2						
--.	-20.53267	19.46301	-1.05	0.302	-60.61748	**19.55214**
L1.	-2.699766	27.90693	-0.10	0.924	-60.17517	**54.77564**
L2.	22.48251	20.67783	1.09	0.287	-20.10428	**65.0693**
_cons	-11.12433	48.81093	-0.23	0.822	-111.6523	**89.40365**

The results of the ARDL (2, 4, 2) model estimation are presented in Table 4, with inflation (inf) as the dependent variable and the independent variables being the logarithm of the exchange rate (logexr) and the logarithm of the money supply (logm2). The analysis covers the sample period from 2015 first quarter to 2023 fourth quarter, comprising 36 observations. Key model diagnostics and interpretations are outlined below.

The R^2 value is 0.9132, indicating that about 91.3% of the variation in inflation is defined by the model. The adjusted R^2 of 0.8785 accounts for the number of explanatory variables, suggesting a robust fit. The F-statistic (26.31) is significant at the 1% level, confirming

the joint significance of the model predictors. The Root Mean Squared Error (RMSE) is 1.9080, showing the mean deviation of the forecasted inflation from actual inflation.

Key Findings

The coefficient of the inflation-lagged values for the first lag is 1.3175 and is statistically significant. This suggests a strong positive autocorrelation, where high level inflation in the previous period causes higher inflation in the current period. On the other hand, the second lag (inf) has a coefficient of -0.5841 and is also significant. This indicates a negative correction effect over time.

The current coefficient for logarithm of exchange rate (logexr) is 47.5295 and statistically significant. It indicates, a 1% rise in the exchange rate generates a 47.53-unit increase in inflation in the same period. Likewise, significant lagged effects are observed; a 1% increment in the exchange rate from the previous period reduces inflation by 62.1864 units. For second lag, a 1% increase two periods ago increases inflation by 43.4011 units, and the remaining coefficients (-30.6714 and -35.1517) are not statistically significant. In brief, the exchange rate has a strong, dynamic effect on inflation, alternating between positive and negative impacts across different lags, reflecting both immediate and delayed responses in inflationary pressures.

The current coefficient of logarithm of money supply (logm2) is -20.5327, but it is not statistically significant. Similarly, the lagged coefficients are respectively -2.6998 and 22.4825, which are also insignificant. We can conclude that Money supply changes, whether current or lagged, do not appear to influence significantly inflation within the study period.

The ARDL model provides a comprehensive analysis of the relationship among inflation, exchange rate, and money supply. The findings highlight a strong and dynamic relationship exists among the exchange rate and inflation, with significant immediate and lagged effects. Inflation exhibits substantial persistence, with current values strongly influenced by past values. Money supply changes show no statistically significant impact on inflation, suggesting limited direct influence within the sample period.

These findings highlight the significance of exchange rate dynamics in shaping inflationary trends and provide insights for policymakers aiming to manage inflation in the context of exchange rate fluctuations.

e. Regression Diagnostics Report

The results of diagnostic tests conducted to confirm the validity of the regression model by assessing the residuals for heteroskedasticity, autocorrelation, and normality. The tests and findings are as follows:

Table 5: Results of Heteroskedasticity Tests

Tests	Chi²	p-value	Decision (5% Level)
Breusch-Pagan Test	0.18	0.6738	Fail to reject H0: Homoskedasticity
White Test	45.38	0.4981	Fail to reject H0: Homoskedasticity

To evaluate the homoscedasticity assumption, the Breusch-Pagan/Cook-Weisberg test (1979) and white's test (1980) were employed. The chi² statistic is 0.18 and 45.38 with a p-value of 0.6738 and 0.4981 respectively. Since the p-values are much higher than the 0.05 significance threshold, we conclude that there is no evidence of heteroscedasticity in the residuals. Hence, the assumption of constant variation is satisfied.

Table 6: Results of Breusch-Godfrey LM Test for Autocorrelation

Lags (p)	chi2	df	Prob > chi2	Decision (5% Level)
1	3.568	1	0.0589	H0: weak evidence of autocorrelation

The Breusch-Godfrey LM test (1981) was used to check for autocorrelation in residuals. At one lag, the test yielded a chi² statistic of 3.568 and a p-value of 0.0589. The result is marginally above the 0.05 significance level, suggesting weak evidence of autocorrelation. However, under stricter significance levels (e.g., 0.01), the assumption of no autocorrelation holds. If autocorrelation persists, robust standard errors or model modifications should be considered.

Table 7: Shapiro–Wilk W test for normal data

Variable	Obs	W	V	Z	Prob>z
resid	36	0.98360	0.598	-1.074	0.85870

Using the Shapiro-Wilk test (1965), the residuals were evaluated for normality. With a W statistic of 0.98360 and a p-value of 0.85870, the residuals are found to be normally distributed. This satisfies the regression assumption of normality.

The regression model satisfies the assumptions of homoscedasticity and normality. In contrast, there is weak or marginal evidence of autocorrelation. Further analysis or model adjustments may be needed to address this, depending on the significance threshold adopted. Overall, the diagnostics indicate that the model is well specified, with no significant violations of assumptions.

f. Discussion

The relationship among exchange rate fluctuations and inflation in Afghanistan, as examined in this study, provides critical insights into the dynamics of inflationary pressures in a highly import-dependent economy. The findings reveal that exchange rate fluctuations have a significant and dynamic impact on inflation, with effects displaying both immediately and over time through lagged interactions. This underscores the sensitivity of domestic price levels to external economic conditions, particularly in the context of Afghanistan's reliance on imported goods and services. It was reviewed theoretically and empirically that depreciation of the national currency increases the cost of imports, which can lead to cost-push inflation. According to Ghosh (2009), the exchange rate fluctuation influences inflation expectations and pass-through effects, which shows similarity with our results.

One of the key observations from the ARDL analysis is the pronounced effect of exchange rate changes on inflation, highlighting the direct pass-through mechanism where currency depreciation leads to higher import costs, thereby driving inflation. Interestingly, the alternating positive and negative lagged effects suggest complex intertemporal adjustments, where initial shocks are partly corrected or worsen in subsequent periods. This pattern reflects the accurate interaction between market expectations, price adjustments, and potential feedback loops in an open economy setting.

According to theoretical background the Quantity Theory of Money which shows direct relationship between money supply and inflation (Friedman,1963). In contrast, our study indicated that changes in money supply did not exhibit a statistically significant relationship with inflation during the study period. This could be attributed to the specific economic circumstances in Afghanistan, including constrained monetary policy transmission mechanisms, the limited role of formal financial intermediation, and the overriding influence of exchange rate fluctuations. It also raises questions about the efficiency of monetary policy tools in addressing inflation, especially when external factors dominate the inflationary landscape.

The absence of a long-run relationship among the studied variables, as indicated by the bounds test, further emphasizes the predominance of short-term dynamics in shaping inflation trends. This finding aligns with the volatile nature of Afghanistan's economic environment, where external shocks, policy shifts, and geopolitical factors frequently disrupt long-term stability.

Overall, the study highlights the critical importance of exchange rate management in controlling inflation in Afghanistan. It also points to the need for broader structural reforms to address the underlying vulnerabilities, such as dependency on imports and limited industrial capacity, which exacerbate the economy's sensitivity to external factors.

Conclusion

This study investigated the relationship among exchange rate volatility and inflation in Afghanistan, with an emphasis on the potential moderating role of money supply. The analysis, conducted using an Autoregressive Distributed Lag (ARDL) model, revealed significant short-term dynamics between exchange rates and inflation, highlighting the current and lagged effects of exchange rate changes. Specifically, the findings underscored that exchange rate fluctuations apply a strong influence on inflation, exhibiting both positive and negative impacts across different time lags.

Contrary to theoretical expectations, money supply changes—both current and lagged—did not exhibit a statistically significant impact on inflation during the study period. This suggests that, in the context of Afghanistan's heavily import-dependent economy and ongoing international sanctions, the direct relationship between exchange rates and inflation may dominate, with limited contribution from monetary expansion.

Overall, the study emphasizes the critical role of exchange rate dynamics in shaping inflationary pressures in Afghanistan and points to the need for strategic measures to regulate the exchange rate as a means to control inflation and promote economic stability.

Policy Implications and Recommendations

1. Strengthening Exchange Rate Management; The findings underline the importance of the exchange rate stability in mitigating inflationary pressures. Da Afghanistan Bank should adopt targeted interventions, such as maintaining adequate foreign exchange reserves and using currency auctions strategically, to stabilize the Afghani's value against major currencies.

2. Enhancing Monetary Policy Coordination; although money supply changes showed no significant direct impact, a coordinated approach between exchange rate and monetary policies is essential. Regular monitoring of inflation drivers and aligning monetary policy tools with exchange rate objectives could enhance overall policy effectiveness. For this purpose, Da Afghanistan Bank along with other policy formulating

authorities should consider the above recommendation.

3. Promoting Domestic Production; the ministry of commerce and industry in cooperation with ministry of finance should reduce dependency on imports and investments in domestic production and industrial capacity should be prioritized. This can help mitigate the pass-through effects of exchange rate fluctuations on inflation.
4. Adapting to External Shocks: Given Afghanistan's vulnerability to external shocks, contingency plans should be developed by the Islamic Emirate of Afghanistan to soften the economy against sudden exchange rate movements. This includes diversifying trade partners and reducing reliance on single currency transactions.
5. Building Institutional Capacity; strengthening the capacity of key institutions, such as Da Afghanistan Bank, to conduct macroeconomic analysis and implement effective interventions is crucial. Enhanced transparency and communication in policy decisions can also build public trust and stabilize expectations.
6. Engaging with International community; the ministry of foreign affairs in light of the sanctions and reduced foreign aid, fostering dialogue with international stakeholders to address economic challenges and secure support for stabilization measures could provide much-needed relief.

References

Abbasinejad, H., Tavakolian, H., & Husseini, S. K. (2017). The effects of monetary policy on output and inflation in Afghanistan: A dynamic stochastic general equilibrium approach. *Iranian Economic Review*, 375-408.

Akaike, H. (1974). A new look at the statistical model identification. *IEEE Transactions on Automatic Control, 19*(6), 716–723. https://doi.org/10.1109/TAC.1974.1100705

Azizi, K., & Daqiq, M. (2019). Monetary policy in Afghanistan: Is it efficient? *International Journal of Engineering Applied Sciences and Technology, 4*(6), 19-28.

Breusch, T. S., & Godfrey, L. G. (1981). The testing of serial correlation in linear models when the regressors include lagged dependent variables. *Econometrica, 49*(5), 1161-1176. https://doi.org/10.2307/1912606

Breusch, T. S., & Pagan, A. R. (1979). A simple test for heteroskedasticity and random coefficient variation. *Econometrica, 47*(5), 1287-1294. https://doi.org/10.2307/1911963

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association, 74*(366), 427–431. https://doi.org/10.2307/2286348

Fisher, R. A. (1925). The interpretation of χ^2 from contingency tables, and the calculation of P. *Journal of the Royal Statistical Society*, 85(1), 87-94. https://doi.org/10.2307/2340521

Friedman, M. (1956). The quantity theory of money: A restatement. In M. Friedman (Ed.), *Studies in the quantity theory of money* (pp. 3-21). University of Chicago Press.

Ghosh, A. R. (2009). Exchange rate pass-through: The case of emerging market economies. In M. M. S. M. H. G. Choi (Ed.), *Economic integration and exchange rate systems* (pp. 1-18). Springer.

Hossein Abbasinejad, H., Tavakolian, H., & Husseini, S. K. (2017). The effects of monetary policy on output and inflation in Afghanistan: A dynamic stochastic general equilibrium approach. *Iranian Economic Review, 21*(2), 375-408.

Krugman, P., & Obstfeld, M. (2021). *International economics: Theory and policy* (11th ed.). Pearson.

Mankiw, N. G. (2021). *Principles of economics* (9th ed.). Cengage Learning.

Mishkin, F. S. (2019). *The economics of money, banking, and financial markets* (12th ed.). Pearson.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics, 16*(3), 289–326. https://doi.org/10.1002/jae.616

Shahmordi, A., & X. (2010). The impacts of monetary policies in Iran: A DSGE approach (in Persian). *Journal of Monetary and Banking Research, 2*(1), 31-56.

Shapiro, S. S., & Wilk, M. B. (1965). An analysis of variance test for normality (complete samples). *Biometrika, 52*(3-4), 591-611. https://doi.org/10.1093/biomet/52.3-4.591

Stanikzai, H., Jawhar, D., & Ghausee, S. (2023). Impacts of Da Afghanistan Bank's Monetary Policy on Inflation and Exchange Rate. *Integrated Journal for Research in Arts and Humanities, 157*, 158–162.

Trading Economics. (2024). Afghanistan imports 2003-2023. https://tradingeconomics.com/afghanistan/imports

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica, 48*(4), 817-838. https://doi.org/10.2307/1912934

Wieland, A. O. (2000). Efficient monetary policy design near price stability. *Journal of the Japanese and International Economies, 14*(4), 327–365.